

**Listing of Claims:**

This listing of claims will replace all prior versions and listings of claims in the application.

Claim 1 . (Currently amended): A disposable cassette Apparatus for conducting electrophoresis, said apparatus comprising wherein the cassette comprises:

- i) an enclosed [[a]] chamber having a top wall, a bottom wall, two side walls, a first end wall and a second end wall, wherein;  
the top wall comprises one or more apertures;  
the bottom wall is contiguous, and  
the chamber comprises a first region comprising the one or more apertures; a second region between the first end wall and the first region, and a third region between the second end wall and the first region, wherein the first region is located between the second region and the third region, and the first region, the second region and the third region are located between the top wall and the bottom wall;  
and wherein the chamber comprises defining an electrophoresis area;
- ii) said area comprising a an electrophoresis gel matrix contained within the enclosed chamber, wherein;  
the electrophoresis gel matrix comprises one or more wells located below the one or more apertures; and  
the electrophoresis gel matrix comprises an electrolyte;
- iii) said chamber further comprising a sealed region; an at least one anode within said chamber and in contact with said gel matrix, wherein said anode is contained within said sealed region; located within either the second region or the third region; and
- iv) [[a]] at least one cathode within said chamber and in contact with said gel matrix; located within either the second region or the third region,  
provided that the anode and the cathode are not together in the same region.

Claim 2. (Currently amended): The ~~apparatus~~ disposable cassette of claim 1, wherein said ~~sealed either the second region or third region is sealed before and during the electrophoresis or both the second region and third region are sealed.~~

Claim 3. (Currently amended): The ~~apparatus~~ disposable cassette of claim 1, wherein said the anode comprises an electrochemical ionizable conducting material, wherein the electrochemical ionizable conducting material is electrochemically ionizable during the electrophoresis.

Claim 4. (Currently amended): The ~~apparatus~~ disposable cassette of claim 3, wherein said the electrochemical ionizable conducting material is a metal.

Claim 5. (Currently amended): The ~~apparatus~~ disposable cassette of claim 4, wherein said the anode metal comprises copper.

Claim 6. (Currently amended): The ~~apparatus~~ disposable cassette of claim 4, wherein said the anode metal is selected from the group consisting of comprises silver ~~[[and]]~~ or lead.

Claim 7. (Currently amended): The ~~apparatus~~ disposable cassette of claim 1, wherein said the anode comprises an oxygen-absorbing material.

Claim 8. (Currently amended): The ~~apparatus~~ disposable cassette of claim 1, wherein said the anode is selected from the group consisting of aluminum and carbon.

Claim 9. (Currently amended): The ~~apparatus~~ disposable cassette of claim 1, wherein said the electrophoresis gel matrix is substantially free from oxygen gas during said the electrophoresis.

Claims 10-11. (Cancelled)

Claim 12. (Currently amended): The ~~apparatus~~ disposable cassette of claim ~~[[10]]~~ 1.

wherein said ~~the~~ apertures corresponding to said ~~the~~ loading sites ~~one or more wells~~ are spaced at predetermined intervals so as to conform with intervals between tips on a multi-pipette loader.

Claim 13. (Currently amended): The apparatus disposable cassette of claim 12, wherein said ~~the~~ apertures are arranged in one or more rows.

Claim 14. (Currently amended): The apparatus disposable cassette of claim 12 wherein said ~~the~~ apertures are arranged in two or more row and the rows are arranged in a stagger format.

Claims 15-17. (Cancelled).

Claim 18. (Currently amended): The apparatus disposable cassette of claim ~~[[16]]~~ 1, wherein the cassette further ~~comprising~~ comprises

a matrix, wherein said ~~the~~ matrix is in contact with said ~~the~~ cathode, ~~said and the~~ matrix ~~comprising~~ comprises at least one water sparingly soluble salt; and wherein during the electrophoresis ~~said the electrophoresis~~ gel matrix ~~comprising~~ ions- comprises at least one water sparingly soluble salt ion ~~said ions generated during an electrochemical reaction of said matrix in contact with said cathode.~~

Claim 19. (Currently amended): The apparatus disposable cassette of claim ~~[[16]]~~ 1, wherein said ~~the~~ cathode comprises a hydrogen-absorbing material.

Claim 20. (Currently amended): The apparatus disposable cassette of claim ~~[[19]]~~ 1, wherein said ~~the~~ cathode is selected from the group consisting of palladium, carbon and metal hydrides.

Claim 21. (Currently amended): The apparatus disposable cassette of claim ~~[[16]]~~ 1, wherein said ~~the electrophoresis~~ gel matrix is substantially free from hydrogen gas during said ~~the~~ electrophoresis.

Claims 22-49. (Cancelled)

Claim 50. (Currently amended): The ~~apparatus~~ disposable cassette of claim [[45]] 89, wherein said the electrophoresis gel matrix is substantially free from oxygen gas during the electrophoresis.

Claims 51-52. (Cancelled)

Claim 53. (Currently amended): ~~The disposable cassette of claim 93~~ An apparatus for conducting electrophoresis the apparatus comprising: a chamber defining an electrophoresis area, said electrophoresis area having at least one body of a gel matrix for facilitating said electrophoresis; a first electrode; and a second electrode, wherein said first electrode and said second electrode are in contact with said chamber, and at least one of said first electrode and said second electrode is embedded within said at least one body of the gel matrix, wherein said first electrode is an anode and said second electrode is a cathode, said at least one body of said gel matrix comprises electrolyte solution, said the anode comprises an electrochemically ionizable metal, and said electrolyte solution is of a composition such that migration of ions generated during an electrochemical reaction at said anode is inhibited, wherein said electrochemical reaction is not water electrolysis.

Claim 54. (Currently amended) The ~~apparatus~~ disposable cassette of claim 53, wherein said anode the electrochemically ionizable the metal comprises copper.

Claim 55. (Currently amended) The ~~apparatus~~ disposable cassette of claim 53, wherein said anode the electrochemically ionizable the metal comprises silver.

Claim 56. (Currently amended) The ~~apparatus~~ disposable cassette of claim [[53]] 94, wherein said the electrolyte ~~solution~~ is selected [[fom]] from the group consisting of Bis-Tris-Tricine, Bis-Tris-Bicine, Tris-Glycine, Bis-Tris-Glycylglycine, Amino methyl

propanol-Proline, and TBE.

Claim 57. (Cancelled)

Claim 58. (Currently amended) The ~~apparatus~~ disposable cassette of claim [[57]] 93, wherein said apertures corresponding to ~~said loading sites~~ the one or more wells are spaced at predetermined intervals so as to conform with intervals between tips on a multi-pipette loader.

Claim 59. (Currently amended) The ~~apparatus~~ disposable cassette of claim 58, wherein ~~said the~~ apertures corresponding to ~~said loading sites~~ the one or more wells are arranged in one or more rows.

Claim 60. (Currently amended) The ~~apparatus~~ disposable cassette of claim [[59]] 58, wherein ~~said the apertures are arranged in two or more row and the~~ rows are arranged in a stagger format.

Claim 61. (Cancelled)

Claim 62. (Currently amended): ~~The disposable cassette of claim 85, An apparatus for conducting electrophoresis the apparatus comprising: a chamber defining an electrophoresis area, said chamber comprising a sealed region, said electrophoresis area comprising at least one body of gel matrix for facilitating said electrophoresis; a first electrode; and a second electrode, wherein said first and said second electrodes are in contact with said chamber, at least one of said first and said second electrodes is embedded within said at least one body of gel matrix, said first electrode is an anode and said second electrode is a cathode, said at least one body of said gel matrix comprises electrolyte solution, said the anode is contained within said sealed region and comprises an electrochemically ionizable metal, and said electrolyte solution is of a composition such that migration of ions generated during an electrochemical reaction at said anode is inhibited, wherein said electrochemical reaction is not water electrolysis.~~

Claim 63. (Currently amended) The ~~apparatus~~ disposable cassette of claim 62, wherein ~~said anode~~ the electrochemically ionizable metal comprises copper.

Claim 64. (Currently amended) The ~~apparatus~~ disposable cassette of claim 62, wherein ~~said anode~~ electrochemically ionizable the metal comprises silver.

Claim 65. (Currently amended) The ~~apparatus~~ disposable cassette of claim [[62]] 95, wherein ~~said the~~ electrolyte solution is selected from the group consisting of Bis-Tris-Tricine, Bis-Tris-Bicine, Tris-Glycine, Bis-Tris-Glycylglycine, Amino methyl propanol-Proline, and TBE.

Claim 66. (Cancelled)

Claim 67. (Currently amended) The ~~apparatus~~ disposable cassette of claim [[66]] 62, wherein ~~said the~~ apertures corresponding to said loading sites the one or more wells are spaced at predetermined intervals so as to conform with intervals between tips on a multi-pipette loader.

Claim 68. (Currently amended) The ~~apparatus~~ disposable cassette of claim 67, wherein ~~said the~~ apertures corresponding to said loading sites the one or more wells are arranged in one or more rows.

Claim 69. (Currently amended) The ~~apparatus~~ disposable cassette of claim [[68]] 67, wherein ~~said the~~ apertures are arranged in two or more row and the rows are arranged in stagger format.

Claim 70. (Cancelled)

Claim 71. (Currently amended) A method for performing electrophoresis, the method comprising the steps of:

- i) providing a disposable cassette, wherein the cassette comprises:  
an enclosed chamber having a top wall, a bottom wall, two side walls, a  
first end wall and a second end wall, wherein;  
the top wall comprises one or more apertures;  
the bottom wall is contiguous, and  
the chamber comprises a first region comprising the one or  
more apertures; a second region between the first end wall  
and the first region, and a third region between the second  
end wall and the first region, thereby the first region is  
located between the second region and the third region, and  
the first region, the second region and the third region are  
located between the top wall and the bottom wall;  
an electrophoresis gel matrix contained within the enclosed chamber,  
wherein the electrophoresis gel matrix comprises one or more wells  
located below the one or more apertures and wherein the  
electrophoresis gel matrix comprises an electrolyte;  
at least one anode located within the second region or the third region, and  
at least one cathode located within the second region or the third region,  
provided that the anode and the cathode are not together in the same  
region;
- ii) loading one or more samples into the one or more wells through the one or  
more apertures; and
- iii) applying an electrical field to [[a]] the electrophoresis gel matrix thereby  
performing electrophoresis; wherein said gel is within a chamber that  
comprises a sealed region, wherein said chamber further comprises an anode  
contained within said sealed region and a cathode in contact with said gel  
matrix; degrading a metal anode by said application of said electrical field;  
and releasing ions required for maintaining an electrical field by said  
degradation.

Claim 73. (Currently amended) ~~A method for electrophoresis, the method comprising the steps of: applying an electrical field to a gel, wherein said gel is within a chamber that comprises a sealed region, wherein said chamber further comprises an cathode contained within said sealed region and an anode in contact with said gel matrix. The method of claim 71, further comprising degrading a sparingly water-soluble salt in contact with [[a]] the at least one cathode by said the application of said the electrical field; and thereby releasing ions required for maintaining an the electrical field by said degradation.~~

Claim 74. (Cancelled)

Claim 75. (Currently amended) ~~A method for electrophoresis, the method comprising the steps of: applying an electrical field to a gel, wherein said gel is within a chamber that comprises a first sealed region and a second sealed region, wherein said chamber further comprises an anode contained within said first sealed region and a cathode in said second sealed region, said anode and said cathode in contact with said gel matrix; The method of claim 71, further comprising degrading a metal the anode, wherein the anode comprises at least one electrochemically ionizable anode by said the application of said the electrical field, thereby releasing ions required for maintaining an the electrical field degrading a sparingly water-soluble salt in contact with a cathode by said application of said electrical field; and releasing ions required for maintaining an electrical field by said degradation.~~

Claim 76. (Cancelled)

Claim 77. (Original) A method for electrophoresis, the method comprising the steps of: applying an electrical field to a gel; degrading a metal anode by said application of said electrical field; releasing ions required for maintaining an electrical field by said degradation, and inhibiting migration of said ions in the vicinity of said anode.

Claim 78. (Cancelled)



Claim 79. (Currently amended) The method of claim ~~[[78]]~~ 71, wherein ~~said at least one body of said gel matrix comprises electrolyte solution, and said the~~ electrolyte solution is of a composition ~~such that~~ inhibits migration of ions generated during ~~an electrochemical reaction at said the degradation of the at least one electrochemically ionizable anode is~~ inhibited.

Claim 80. (Currently amended) The ~~apparatus~~ method of claim 79, wherein ~~said the~~ electrolyte ~~solution~~ is selected from the group consisting of Bis-Tris-Tricine, Bis-Tris-Bicine, Tris-Glycine, Bis-Tris-Glycylglycine, Amino methyl propanol-Proline, and TBE.

Claim 81. (Currently amended) The ~~apparatus~~ disposable cassette of claim ~~[[4]]~~ 3, wherein ~~said at least one body of said gel matrix comprises electrolyte solution, and said the~~ electrolyte ~~solution~~ is of a composition ~~that inhibits the such that~~ migration of ions generated during an electrochemical reaction ~~at said of the electrochemical ionizable conducting material anode is inhibited, wherein said electrochemical reaction is not water electrolysis.~~

Claim 82. (Currently amended) The ~~apparatus~~ disposable cassette of claim 81, wherein ~~said the~~ electrolyte ~~solution~~ is selected from the group consisting of Bis-Tris-Tricine, Bis-Tris-Bicine, Tris-Glycine, Bis-Tris-Glycylglycine, Amino methyl propanol-Proline, and TBE.

Claim 83-84. (Cancelled)

Claim 85 . (New): The cassette of claim 1, wherein the at least one anode is located within the second region and the at least one cathode is located within the third region.

Claim 86 . (New): The cassette of claim 1, wherein the at least one anode is located within the third region and the at least one cathode is located within the second region.

Claim 87 . (New): The cassette of claim 1, wherein the at least one anode or the at least one cathode is embedded within the electrophoresis gel matrix.

Claim 88. (New) The cassette of claim 1, wherein the electrophoresis gel matrix further comprises ions generated during an electrochemical reaction of the anode during the electrophoresis.

Claim 89. (New) The cassette of claim 1, wherein the electrolyte is of a composition that inhibits the migration of ions generated during the electrochemical reaction of the anode.

Claim 90. (New) The cassette of claim 91, wherein the electrolyte is selected from the group consisting of Bis-Tris-Tricine, Bis-Tris-Bicine, Tris-Glycine, Bis-Tris-Glycylglycine, Amino methyl propanol-Proline, and TBE.

Claim 91 . (New): The cassette of claim 1, wherein the at least one anode and the at least one cathode are embedded within the electrophoresis gel matrix.

Claim 92. (New) The cassette of claim 93, wherein the electrolyte is of a composition that inhibits the migration of ions generated during the electrochemical reaction of the anode.

Claim 93. (New) The cassette of claim 62, wherein the electrolyte is of a composition that inhibits the migration of ions generated during the electrochemical reaction of the anode.

Claim 94. (New) The method of claim 71, wherein either the second region or third region is sealed before and during performing the electrophoresis or both the second region and third region are sealed before and during performing the electrophoresis.

Claim 95. (New) The device of claim 1, wherein the top wall is sealed to the side walls.

Claim 96. (New) The device of claim 95, wherein the top wall is sealed to the to the first end wall and the second end wall.

Claim 97. (New) The method of claim 71, wherein the top wall is sealed to the side walls before and during performing electrophoresis.

Claim 98. (New) The method of claim 97, wherein the top wall is sealed to the to the first end wall and the second end wall before and while performing electrophoresis.

Claim 99. (New) The device of claim 1, wherein the bottom wall is planar.

Claim 100. (New) The method of claim 71, wherein the bottom wall is planar.